Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:

April 2005 Lidar Point Data of Southern California Coastline: Long Beach to US/Mexican Border

1.2. Summary description of the data:

This data set contains lidar point data (latitude/longitude) from a strip of Southern California

coastline (including water, beach, cliffs, and top of cliffs) from Long Beach to the US/ Mexico border. The data set was

created by combining data collected using an Optech Inc. Airborne Laser Terrain Mapper (ALTM) 1225 in combination with

geodetic quality Global Positioning System (GPS) airborne and ground-based receivers. The Bureau of Economic Geology,

the University of Texas at Austin owns and operates an ALTM 1225 system (serial number 99d118). The system was installed

in a twin engine Partenavia P-68 Observer (tail number N6602L) owned and operated by Aspen Helicopter, Inc. The lidar

data set described by this document was collected on 4 and 8 April 2005; Julian Days 09405 and 09805 (see Lineage,

Source_Information, Source_Contribution for pass information). 99d118 instrument settings for these flights were;

laser pulse rate: 25kHz, scanner rate: 26Hz, scan angle: +/- 20deg, beam divergence: narrow, altitude: 900-1100m AGL,

and ground speed: 100-125kts. Three GPS base stations (Seal Beach, Dana Point, and Point Loma, see Lineage,

Source_Information, Source_Contribution for coordinates) operated during the survey. Data represented is all points

including terrain, vegetation, and structures. This data also contains returns from the water surface.

No processing has been done to remove returns from terrain, vegetation, structures or water surfaces.

Original contact information:

Contact Name: Julie Thomas/Randy Bucciarelli

Contact Org: SCBPS/CDIP, Scripps Institution of Oceanography

Title: Project Managers

Phone: 858-534-3032

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2005-04-04 to 2005-04-08

1.5. Actual or planned geographic coverage of the data:
W: -118.205345, E: -117.128845, N: 33.768786, S: 32.562486

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Process Steps:
- 2005-04-04 00:00:00 - GPS and XYZ-Point Data Processing The National Geodetic Survey's PAGES-NT software was used to compute double differenced, ionospherically corrected, static GPS solutions for each GPS base station with precise ephemeredes from the International GPS Service (IGS). As part of the solution tropospheric zenith delays were estimated and L1 and L2 phase biases were fixed as integers. Aircraft trajectories were estimated with respect to all base stations using National Geodetic Survey's Kinematic and Rapid-Static Software (KARS) software. Trajectories were double-differenced, ionospherically corrected, bias-fixed GPS solutions computed with precise IGS ephemeredes. Coordinates for base stations and trajectories were in the International Terrestrial Reference Frame of 2000 (ITRF00). The aircraft trajectory were transformed from the ITRF00 to North American Datum of 1983 (NAD83) using the Horizontal Time Dependent Positioning (HDTP) software (Snay, 1999) The 1Hz GPS trajectory and 50Hz aircraft inertial

measurement unit (IMU) data were combined in Applanix's POSProc version 2.1.4 to compute an aided inertial navigation solution (INS) and a 50Hz, smoothed best estimate of trajectory (SBET) for day 09405. On the second day of data collection (09805), due to an equipment problem, the IMU data was recorded with random data gaps onto the ALTM1225 hard drive. Because of these data gaps, the post-processed INS and SBET for 09805 was judged not acceptable. The 1Hz aircraft trajectory computed with KARS and the real-time, aided INS solution from POS-AV provided better results. The SBET (09405) and KARS trajectory (09805), laser range observations, scanner position information, and GPS/internal clock files were processed in Realm 2.27 software suite to generate lidar data points in the Universal Transverse Mercator (UTM) projection. Lidar point data were compared to GPS ground survey data and 1998 ATM lidar data to estimate lidar instrument calibration parameters: roll and pitch biases, scanner scale factor, and first/last return elevation biases. An iterative, least-squares methodology was used to estimate calibration parameters so as to minimize differences between lidar and ground GPS data. Samples of lidar data were used to create high-resolution digital elevation models (DEM); these DEM were inspected for horizontal or vertical anomalies. After system calibration and initial quality control step, the adjusted lidar x,y,z-point data were generated by REALM software and output in UTM, zone 11 with elevations being heights above the GRS-80 reference ellipsoid (HAE). The output format from REALM 2.27 was a 9-column ASCII file containing: the second in the GPS week, easting, northing and HAE of the first lidar return, the easting, northing and HAE of the last lidar return, and the laser backscatter intensity of the first and last returns. Each record contains 9 columns of data: time tag (seconds in the GPS week), first return Easting, first return Northing, first return NAVD88, last return Easting, last return Northing, last return NAVD88, first return intensity, and last return intensity. In some cases either the first or last return values may be missing (5 columns).

- 2005-04-04 00:00:00 - Data Classification Processing The classification of the lidar point data was accomplished with algorithms developed at the Center for Space Research and implemented by C++ code running on PC computer using the LINUX operating system. The ASCII lidar files were converted into binary and concatenated into a processing database. Data were separated into ground and non-ground points using a lower envelope follower (LEF). A lower envelope detector is an electronic circuit used to recover information in an Amplitude Modulated (AM) signal and the concept was adapted to the problem of extracting the ground surface from the lidar signal by creating a computer analog: the lower envelope follower (LEF) The LEF was used to detect ground points, or seeds, which include pixels located on open ground or on the ground surface beneath vegetation penetrated by the laser, but excludes buildings and vegetation. The LEF operation does not detect some ground surface areas with low gradients, so detected ground pixels are augmented using an adaptive gradient flood fill procedure. The adaptive threshold value is determined as a function of surface roughness and topographic relief. The adaptive gradient flood fill procedure results in a ground mask which is used to

parse individual lidar points into ground or non-ground files. In some instances, hand editing is required to ensure accuracy of the ground mask. This includes the addition of seed points along topographic ridges or removal of buildings not detected during previous steps. The 9-column binary dataset was pushed through the ground mask and each lidar point is classified as either ground or non-ground depending on its elevation with respect to a threshold above or below the estimated ground surface. Buildings are included as non-ground points. The final ground-only data points were parsed converted back into ASCII format. Using the GEOID99 geoid model, heights above the GRS80 ellipsoid were converted to orthometric heights with respect to the North American Vertical Datum of 1988 (NAVD88). The final step was parsing the data into quarter quadrangles. Processing occurred 20050404-20050728.
- 2003-04-18 00:00:00 - Created initial metadata
- 2007-07-24 00:00:00 - The NOAA Office for Coastal Management (OCM) received files in ASCII format. The files contained LiDAR intensity and elevation measurements. OCM performed the following processing on the data to make it available within the LiDAR Data Retrieval Tool (LDART) 1. Data returned to ellipsoid heights from NAVD88, using GEOID99. 2. Data converted to LAS format. 3. The LAS data were sorted by latitude and the headers were updated.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

No

6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:
- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?

- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:
https://www.fisheries.noaa.gov/inport/item/50008

6.4. Process for producing and maintaining metadata
(describe or provide URL of description):
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:

https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=52
https://coast.noaa.gov/htdata/lidar1_z/geoid12a/data/52

7.3. Data access methods or services offered:

This data can be obtained on-line at the following URL: https://coast.noaa.gov/dataviewer

;

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.